BB

BOT BASH

BOT BASH 2025

ROBO BATTLE CHAMPIONSHIP
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Overview

Bot Bash 2025 represents Sri Lanka's most ambitious foray into competitive combat robotics, blending mechanical engineering prowess with strategic combat dynamics. This expanded ruleset provides an exhaustive framework for participants, judges, and organizers, ensuring operational clarity while maintaining the competition's core principles of innovation, safety, and fair play. The championship invites global competitors to test their robotic creations under rigorously standardized conditions within a 20ft×20ft battle arena, employing a hybrid tournament structure combining league matches and knockout finals. With weight limits capped at 15kg and dimensional constraints of 50cm³, participants must balance destructive capability with defensive resilience while adhering to strict safety protocols governing weapon systems, power supplies, and movement mechanisms.

Section 1:

Competition Foundations & Organizational Structure

Bot Bash 2025 is the largest combat robotics event ever organized in Asian region. In 2025 Bot Bash introduces three critical innovations for robo battles:

1. Dual-stage tournament architecture combining round-robin qualifiers with elimination finals
2. Standardized scoring metrics evaluating damage output (50% weightage), tactical aggression (20%), spatial control (20%), and strategic adaptation (10%)
3. Modular arena design featuring eight retractable pit zones activated through motion sensitive floor pane

These developments aim to elevate technical standards while preserving accessibility for amateur builders. The competition serves dual purposes: advancing Sri Lanka's position in competitive robotics and providing a testing ground for autonomous systems under combat conditions.

1.1 Governance Framework

A five-member oversight committee comprising mechanical engineers and robotic specialists administers the championship. Key governance pillars include:

- **Technical Compliance:** All robots undergo pre-tournament inspection across 23 parameters, from weapon torque measurements to battery containment integrity
- **Ethical Engineering:** Prohibitions extend beyond explicitly dangerous weapons (e.g., explosives) to include psychologically disruptive systems like high-frequency sonic emitters
- **Dynamic Rule Adaptation:** Real-time adjustments permitted for environmental factors (e.g., monsoon-proofing electronic components) through majority committee vote

For inquiries, contact our support team at [admin@botbash2025.com]

Section 2:

Participant Eligibility & Registration Protocols

2.1 Team Composition Requirements

The competition welcomes multidisciplinary teams of 2-5 members, requiring:
- Minimum two operational specialists (driver + weapons technician present during matches / can use only maximum 2 controllers)
- One drone pilot to handle the additional attack drone (More details given under section 3.2 05/06)

Recent analytics indicate optimal team performance correlates with balanced skill sets: 40% mechanical engineering, 30% software programming, 20% tactical strategy, and 10% materials science expertise.

2.2 Registration Requirements

Teams must submit the following details:

- **Robot Name**
- **Weight & Dimensions**
- **Main Weapon Description**
- **Robot Overview**
- **Team Member Details (Name, Age, Contact Info)**
- **Organization Name (Optional)**

Registration must be completed via the official website before **March 15, 2025**.
[www.botbash2025.com]

Section 3:

Robotic Design Specifications & Engineering Constraints

3.1 Mobility Systems Engineering

Permitted locomotion modalities include:

- Wheeled Systems: Dominant choice due to speed advantages (tested top speed: 4.2 m/s)
- Tracked Configurations: Preferred for uneven terrain negotiation despite 18% higher weight penalties
- Legged Mechanics: Granted +2kg weight allowance but require demonstrated 360° self- righting capability

All systems must maintain continuous ground contact except during controlled offensive maneuvers. Anti-gravity systems remain prohibited pending international safety certifications.

3.2 Weaponization

01. **Projectile Weapons:** Projectile weapons are allowed, as long as they do not create an arena-fouling problem. Projectile weapons must not use explosives. Springs, catapults and gas-pressure powered guns may be acceptable. You may be required to show that your projectile weapon will not damage the Lexan exterior of the arena.
02. **Multiple Weapons:** A bot may be equipped with multiple weapons, but at least one must have the capability to inflict damage or incapacitate. The use of interchangeable (modular) weapons is recommended.
03. **Spinning Weapons:** Spinning weapons must include a fail-safe that cuts power to the spinning components if the RC signal is lost. Spinning weapons must come to a complete stop within 60 seconds after receiving a command from the remote controller or if the RC signal is lost. Any spinning parts, such as bars, arms, drums, or toothed disks, must not exceed 80 pounds in weight. Whole-body spinning shells or surrounding cages cannot weigh more than 33 pounds.
04. **Lifter/Flipper Weapons:** Any lifting or grappling weapon must demonstrate the ability to lift 10kg to a height of 12 inches. Flipper bots must show they can throw a 10kg weight more than 2 feet into the air. The lifting or flipping must be done without the bot moving across the floor. Botbash will provide a testing weight, but teams are allowed to bring their own weight.
05. **Flame Gun:** Flame outputs are subject to the following:
    - Total gas storage per bot is limited to 200g.
    - All gas storage tanks must be protected with armor.
    - The gas cannot be deliberately heated or cooled.
    - The flame effect can be reliably started and stopped at will using the remote control.
    - The maximum length of the flame is 4 feet, regardless of the pointing direction.

- The length and angle limits of the flame must be adjustable.
06. **Fire-throwing drone:** Each team can use a fire-throwing drone as its weapon. Its maximum weight should not exceed 1.5kg. Every three minutes after the start of the match, each team gets a maximum of one minute to use that weapon. Flames from drone must be aimed vertically downward. At maximum gas flow, the flame can't operate for more than 1-minute total time. Note that the 4-foot flame length requirement will be strictly enforced, with potentially serious consequences for bots with flames exceeding this limit. Bot Bash officials reserve the right to test a bot at any time to verify the flame length.
07. **Prohibited Weapons:** The following weapon types are not allowed under any circumstances
    - Fouling devices such as glue, nets, fishing line, ball bearings and such.
    - Squirting liquids or liquefied gasses such as liquid Nitrogen.
    - EMP generators or other means intended to damage or jam the opponent bot's electronics.
    - Deliberate smoke generators.
    - Bright lights, lasers, etc., that are distracting or dangerous to vision.
    - Weapons that damage the other bot by destroying themselves.
    - Magnetics weapons

At the end of each competition, a damaged weapon system can be replaced with a new weapon system of the same type, approved by the Organizing Committee, within 10 minutes. (All necessary equipment should be brought for that.)

3.3 Power Systems

The 48V DC ceiling accommodates lithium-based chemistries while prohibiting experimental batteries (e.g., graphene hybrids). Mandatory protections include:
- Triple-layer battery encapsulation using 3mm aluminum alloy
- Distributed temperature sensors triggering automatic shutdown at 70°C
- Galvanic isolation between drive and weapon circuits

Charging stations provide regulated 10A current limiting, requiring teams to cycle batteries through centralized monitoring hubs

3.4 Remote Control System

Must use **Digital Spread Spectrum (DSS)** for interference prevention. Each robot can use only two remotes: one for controlling movement and the other for controlling fighting actions.

Cannot require more than **30 seconds** to activate the bot and must include a **Master Kill Switch** that fully deactivates the robot within **01 minutes.**

3.5 Construction Materials

This is not a comprehensive list. Be sensible. if you are unsure whether or not materials used on your bot may be prohibited.

- Radioactive materials.
- Hazardous loose fibers (asbestos, etc.). Carbon or fiberglass composites are OK.
- Toxic or reactive metals (e.g., Cadmium, Mercury, Lithium), except in batteries.
- Organic substances (except wood, wood products and battery electrolytes).
- Polyurethane foam

Section 4:

Arena Architecture, Tournament Logistics, Judging Methodology & Match Dynamics

4.1 Battlefield Engineering Specifications

The 20ft × 20ft ×10ft (L × W × H) arena incorporates:

- Modular floor panels 50 50cm rubber sheets)
- Retractable polycarbonate barriers (8mm thickness)
- Includes Mechanically automatic 8 pit zones for elimination.

Environmental simulations model monsoon-level humidity (95% RH) and tropical temperatures (35°C) for reliability testing.

4.2 Competition Phasing

Phase 1 Group Stages:

- 32 teams divided into hemispheric brackets through quantum-randomized seeding
- 3-point system encourages aggressive play (win=3, draw=1, loss=0)
- The top 4 teams in the points table by both groups qualify for second round.

Phase 2 Elimination Finals:

- All matches from the **quarter-finals** to the **finals** will be held on a knock-out basis.
- Each match consists of three rounds, and the winner of two or all three rounds is the winner.

4.2 Combat Termination Triggers

Matches conclude upon:

- **Rule Violations**: If a team violates competition rules, their opponent is declared the winner.
- **Single Incapacitation**: If a robot fails to show movement within **20 seconds**, it is considered incapacitated.
- **Multiple Incapacitations**: If both robots are immobilized at different times, the **last standing robot wins**.
- **Simultaneous Incapacitation**: If both robots stop functioning within **5 seconds**, judges will either decide the winner or schedule a rematch.
- **Falling into the Pit**: If both robots fall into a pit, judges will determine the winner.

- **Time's up:** There are three rounds of maximum 10 minutes each. After that the winner will be determined based on points.
- **Judges' Decision**: If no clear victory condition is met, the winner will be determined based on points.

4.3 Point Breakdown

- **Damage (5 Points):** Effectiveness in damaging the opponent.
- **Aggression (2 Points):** Consistent offensive engagement.
- **Control (2 Points):** Strategic weapon use and maneuvering.
- **Strategy (2 Points):** Tactical approach in combat.

4.4 Finality of Decisions

Judges' decisions are final and cannot be contested.

4.5 Penalties & Disputes

- **Warnings:** Minor rule violations will result in a warning.
- **Point Deductions:** Repeated violations will lead to score reductions.
- **Disqualification:** Serious violations will result in immediate removal from the competition.
- **Appeals:** Teams may appeal to the judges, but all decisions are final.

Section 5

Prizes & Recognition

- **Champion**: Trophy + Rs. 400 000/= Cash Prize
- **Runner-up**: Trophy + Rs. 100 000/= Cash Prize
- **Best Design Award**: Special Recognition
- **Most Aggressive Robot**: Special Recognition

Notice:
These Design Rules are subject to change at any time, with or without prior notice. Any updates will be reflected in a revised Design Rules document, which will be sent via email. You acknowledge that it is your responsibility to read, understand, and comply with all rules provided here or otherwise issued by Bot Bash.

We strongly recommend checking these Design Rules regularly for any updates that may impact your design, build, or ability to compete in the Tournament. Bot Bash reserves the right to disqualify any Team from the Tournament at any time, for any reason (including, but not limited to, failure to meet safety and/or technical requirements), at its sole discretion.

 We look forward to an electrifying **Bot Bash 2025**! Best of luck to all competitors!